CONNECT UNIVERSITY

General Introduction to CEF Digital

An introduction to CEF Digital

Mr Franco Accordino

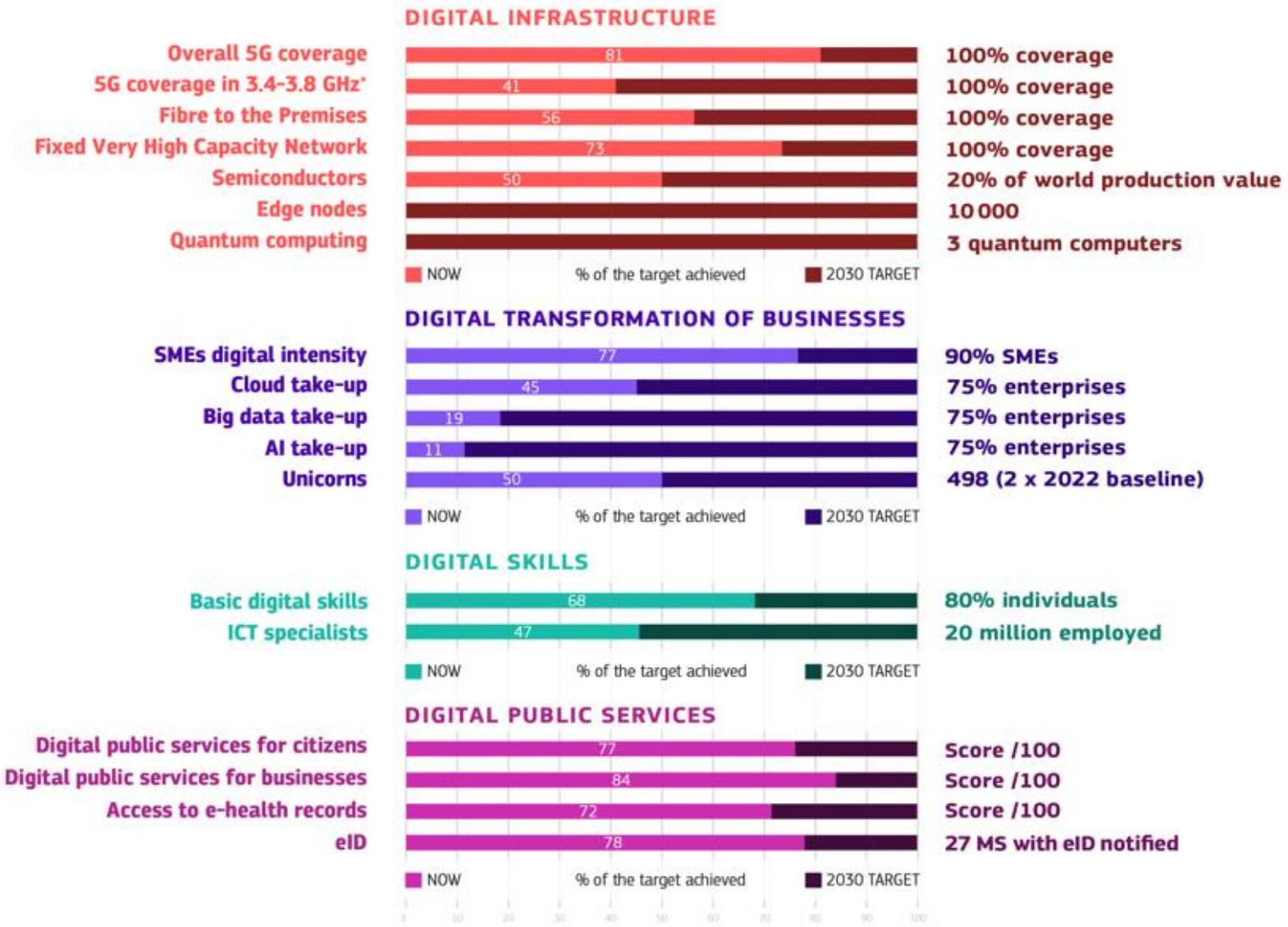
Head of Unit, Unit B.5. - Investment in high-capacity networks

DG CONNECT, European Commission

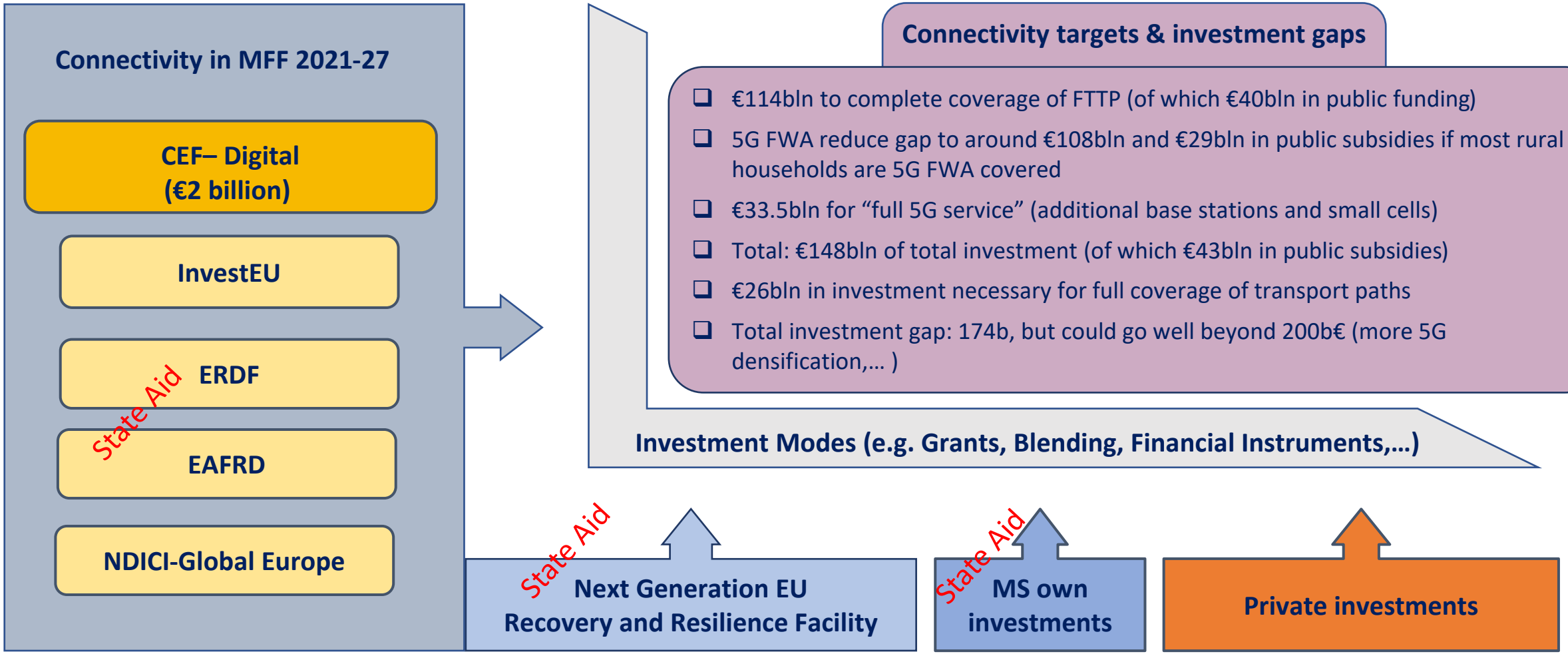
Connectivity as an essential enabler for the digital transition

- New EU Digital Decade policy targets: **1Gbps to all households, 5G in all populated areas**
- Connecting the “small”: IoT systems, towards a “zero-distance society”
- Connecting the “large”: pan-European, cross-border backbones and 5G corridors
- Connectivity driven by innovative use-cases, stimulus to EU digital supply, digital sovereignty

Digital Decade targets – Taking stock of progress towards 2030

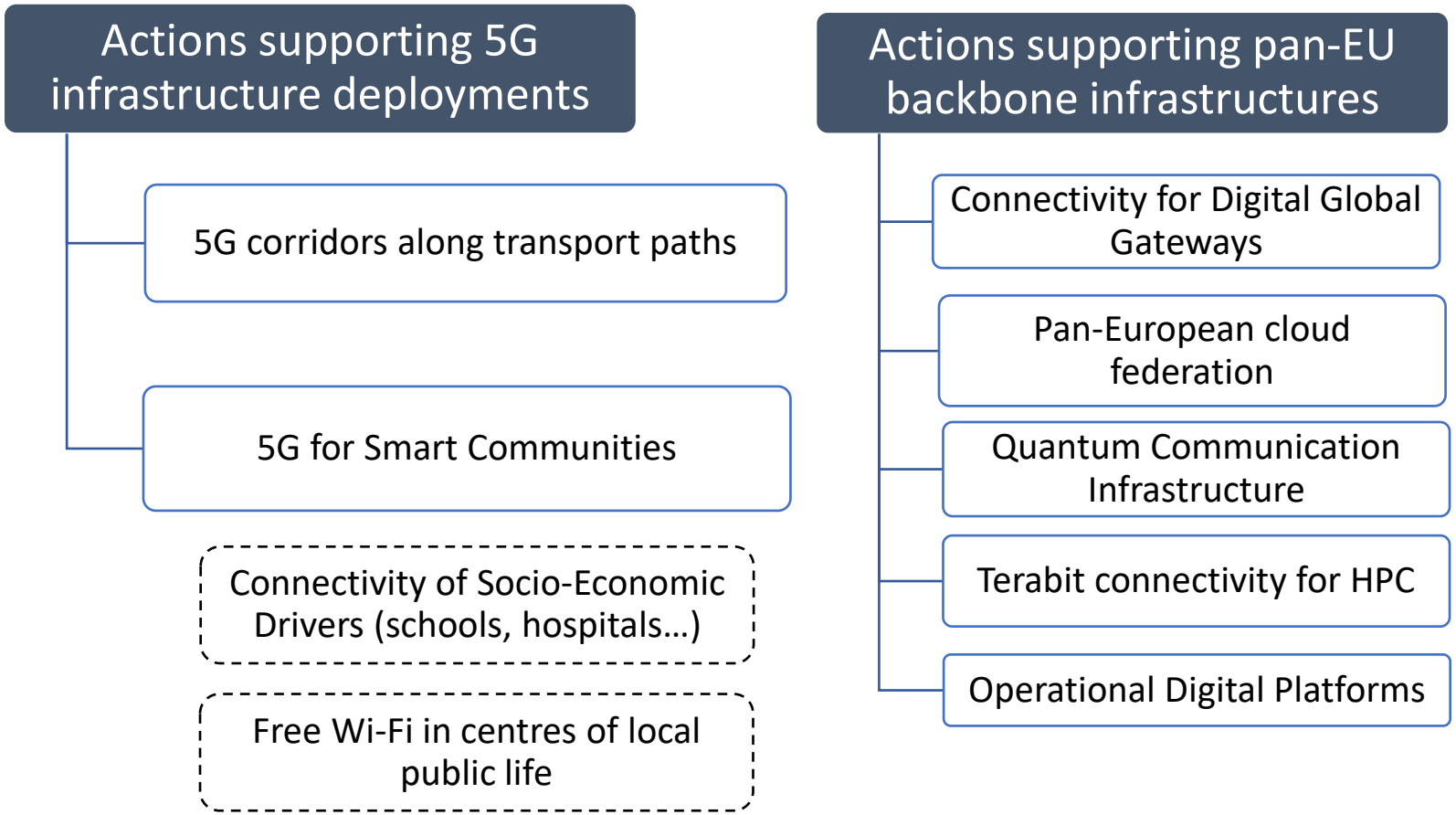


Investment gaps and funding programmes



11% of digital investments in the RRPs (approximately €13 billion out of a total of €117 billion), are dedicated to connectivity!

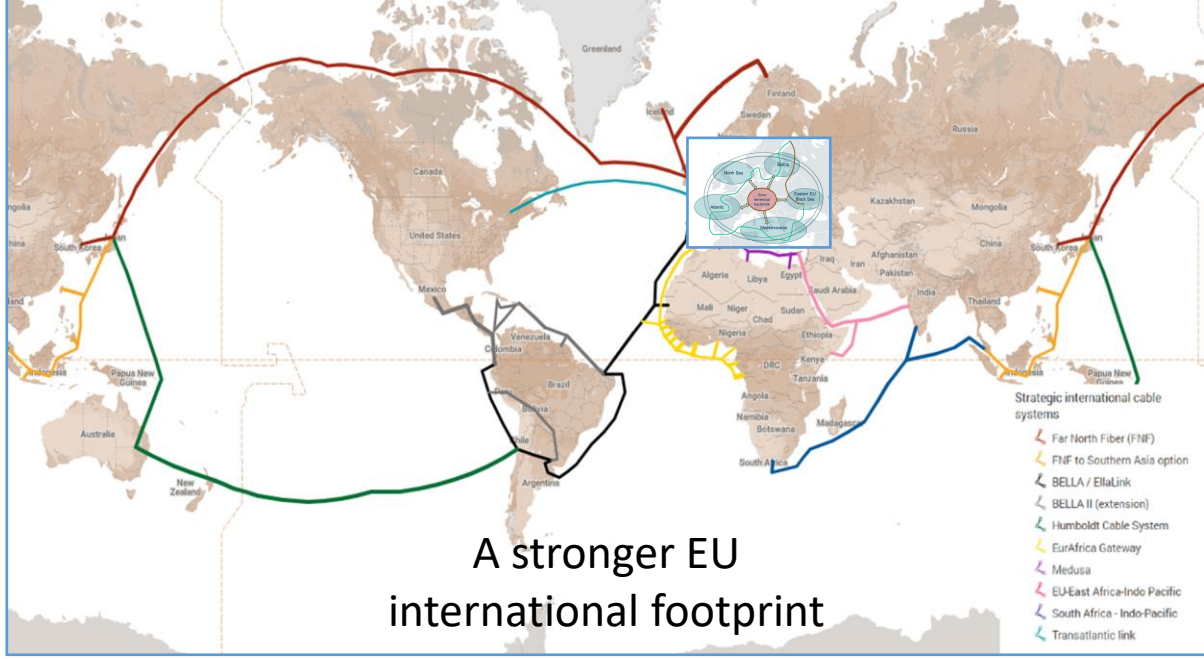
Connecting Europe Facility – CEF DIGITAL (Regulation EU 2021/1153)



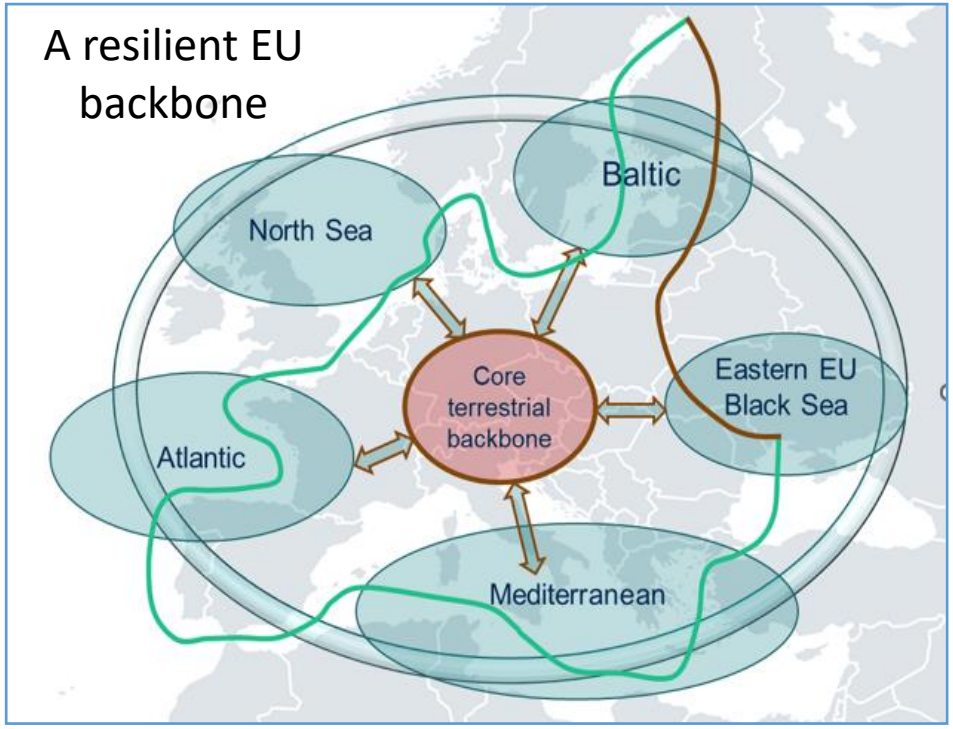
Investments addressing a certain degree of market failure or target areas where suboptimal investments are observed

Backbone connectivity for the EU – Submarine cables

Building a smart, performant and resilient EU backbone infrastructure, ensure EU sovereignty on critical EU assets, reinforce EU footprint in the global context.

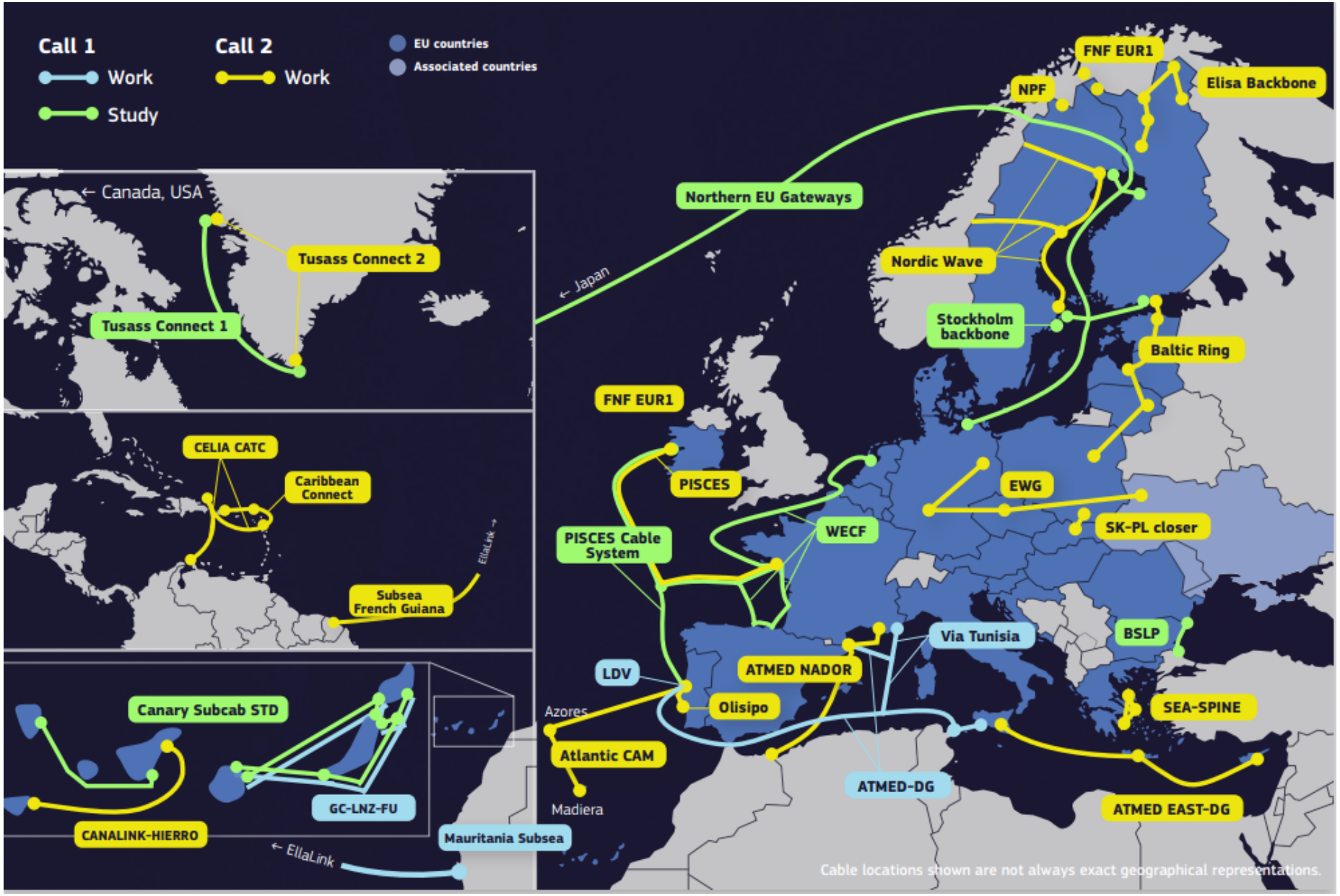


A stronger EU international footprint



- ❑ Strengthen intra-Union links and connections to 3rd countries
- ❑ Synergy with NDICI, IPA III, ERDF
- ❑ Blending operations and financial instruments
- ❑ EU ownership and EU controllership of supply
- ❑ State of the art technology (SMART cables)

Walking the talk: Digital Global Gateways - Calls 1 & 2

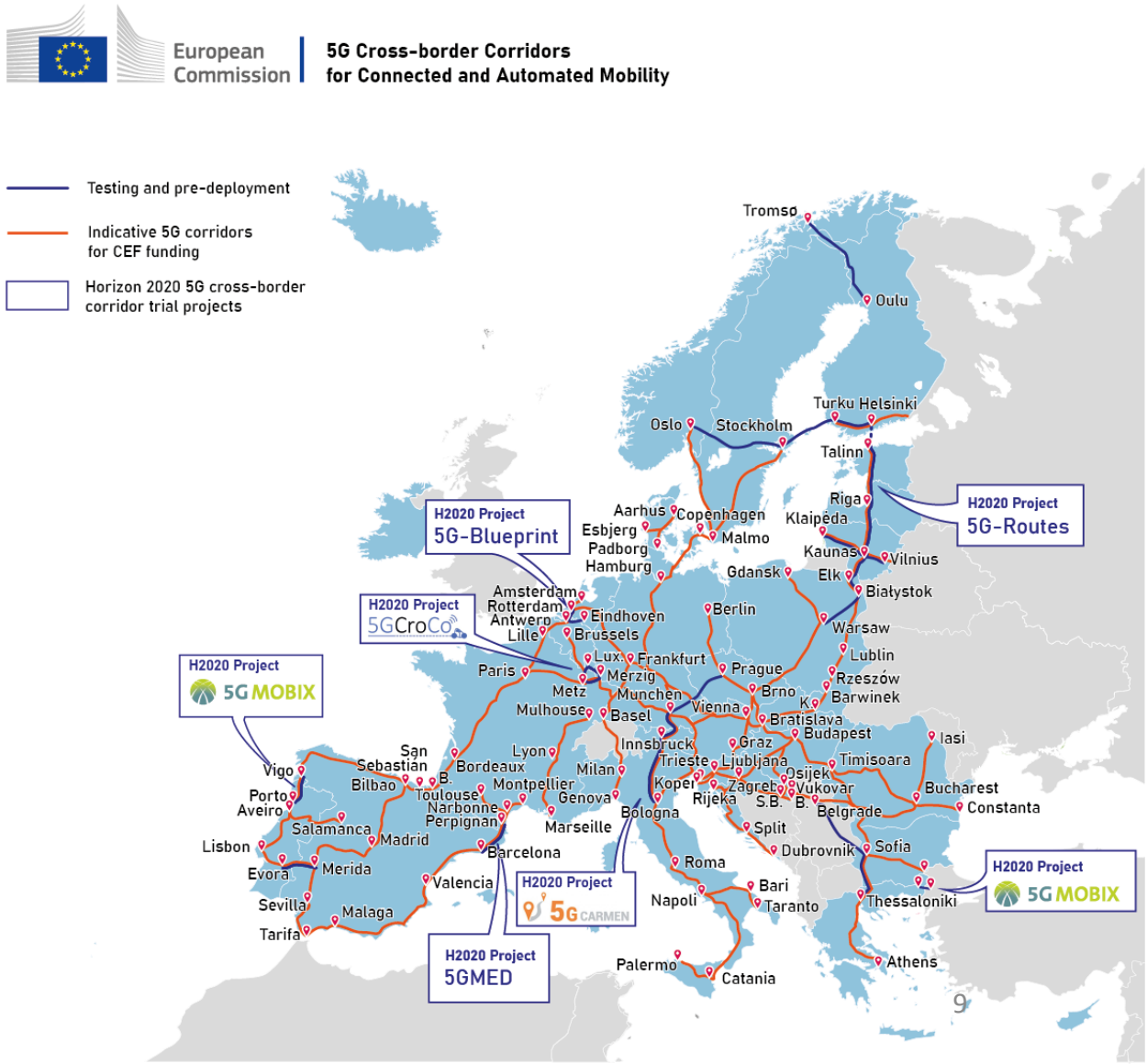


- 30 Projects
- € 277 million
- Wide coverage
- OTCs (Overseas Territories and Countries) and OMRs (Outermost Regions)

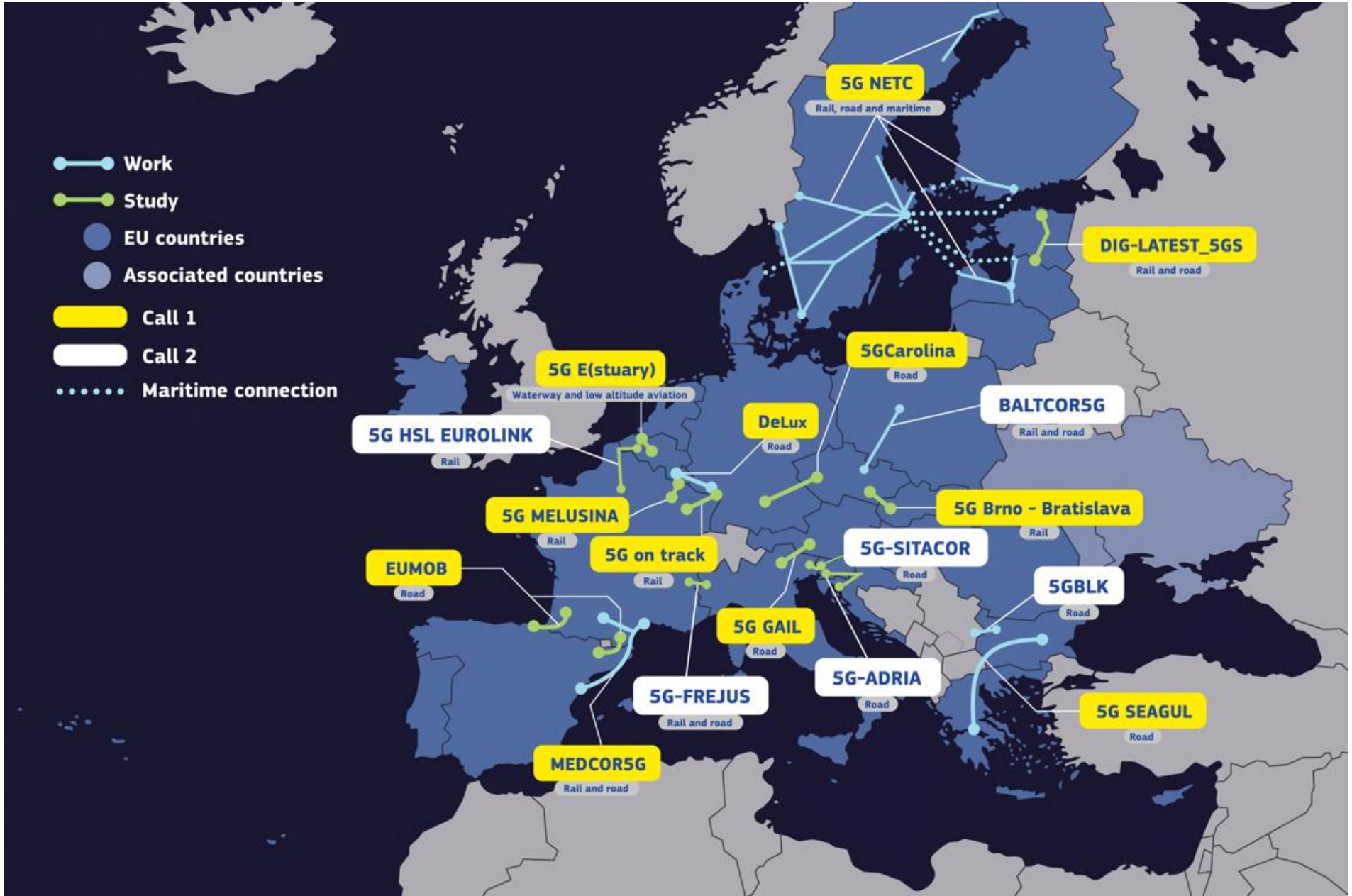
European Commission

5G Corridors: driving the EU Green and Digital Transition

- Multi-country project (MCP) Vision: Pan-EU 5G corridors for Connected and Automated Mobility
- Private investment with public funding of cross-border and "challenge" areas
- CEF Digital
  - Objective: 26.000km transport paths along TEN-T, 49 intra-EU borders; Investment required: ~EUR 5,4 bn
  - Call-1: 12 projects currently on-going
  - Call-2: 6 projects currently on-going
  - **Call-3: ddl 20 February 2024**
- Blending or coordination with RRF, InvestEU and national programmes
- Smart Networks and Services Joint Undertaking formally tasked to coordinate Strategic Deployment Agendas (Road & Rail)



Walking the talk: 5G Corridors - Calls 1 & 2



- 18 Projects
- € 42 million
- Rail, road, maritime
- CAM & more apps

European Commission

The 5G “continuum”

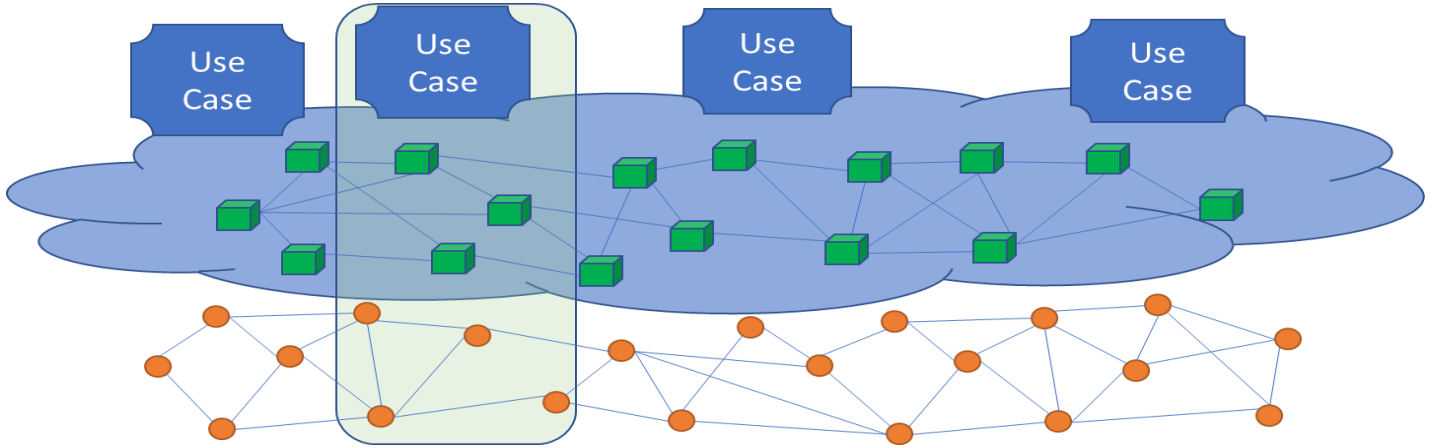
Large-scale 5G deployments → Local 5G systems

Major transport paths

Urban areas

Rural areas

Geographical continuum: From main corridors and cities to local communities and villages



Cloud Edge infrastructure

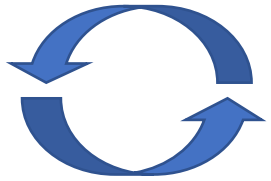
Connected objects and devices (IoT)

Technological continuum: Application-driven vertical integration, stimulus to EU digital supply chain

5G deployment and take up (bundling connectivity to applications via cloud-to-edge/data/IoT)

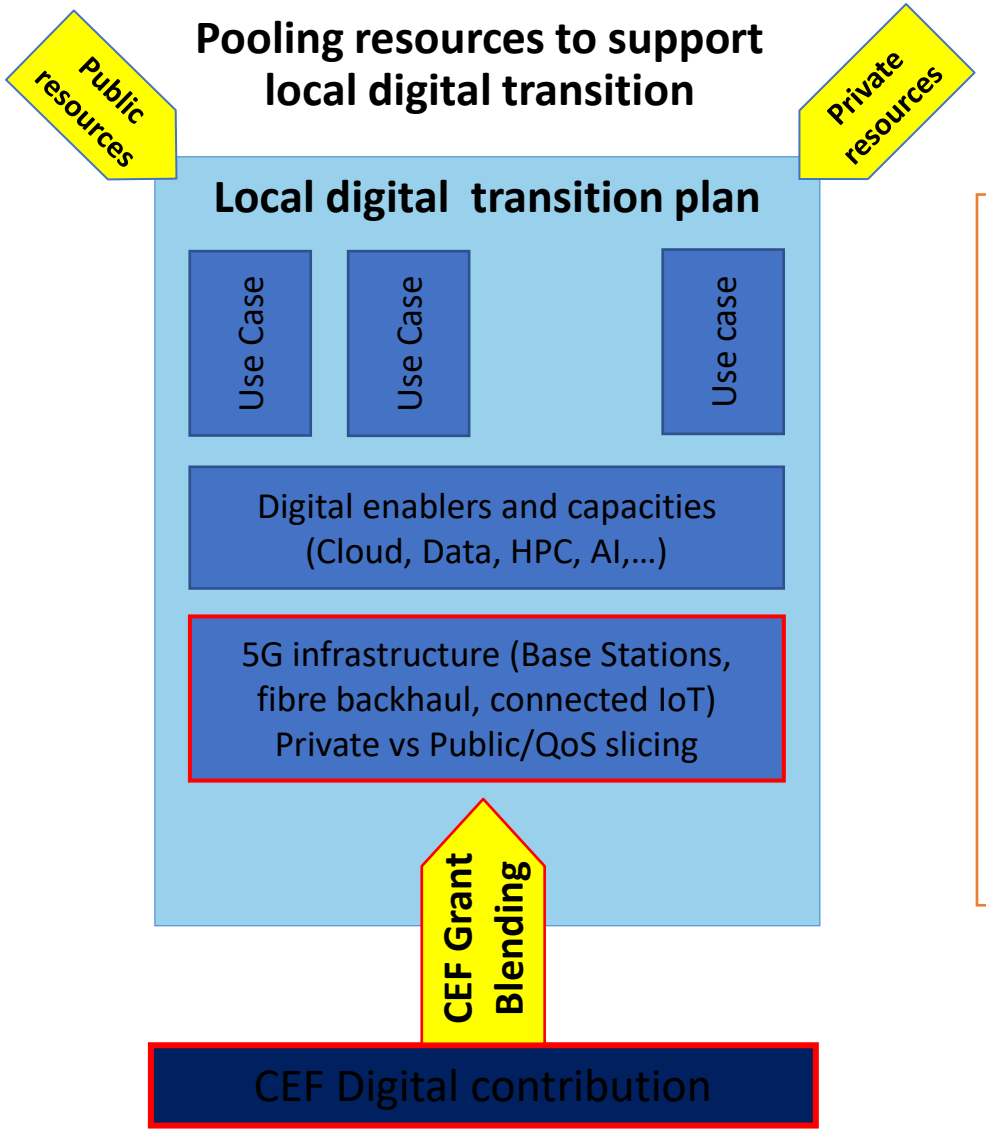
5G connectivity for Smart Communities

Application-pull



Technology-push

- Use cases to develop or improve public services for a local community …
- Stimulating European digital supply chain and standards
- Gigabit and 5G rollout linked to use cases and enabling digital capacities' interconnection



Examples of use cases:

- Healthcare: patient monitoring and assistance at home
- Disaster prevention: geo-environmental data, predictive modeling
- Immersive virtual education and smart working environments
- Smart agriculture and precision farming
- Industry 4.0, manufacturing and logistics

Walking the talk: 5G smart communities - Calls 1 & 2

- 17 Projects
- € 50 mil. grants
- Numerous use cases
- Wide EU coverage

Implementing the CEF Digital programme

- **Grants & Procurement**

- **CEF Digital Connectivity blending facility**

Support projects with a combination of CEF investment grants and financing in repayable form from the Implementing Partners, such as loans or equity capital

- **Blending operations under InvestEU**

Top-up InvestEU guarantees to leverage private and public investments: blending operations and market-conform equity instruments

How to accelerate the deployment of gigabit and 5G networks in the EU?

1. **Connectivity package**
   - Gigabit Infrastructure Act
   - Recommendation on access to Gigabit networks
   - White Paper on the future of telecom sector
   - Recommendation on submarine cables
2. **State aid framework**
   - New Broadband State Aid Guidelines
   - General Block Exemption Regulation
3. **Investment in Gigabit, 5G, Backbones**
   - Variety of programmes available (e.g., CEF, RRF, ERDF,…)
4. **Knowledge sharing and facilitation**
   - Engage with all stakeholders across the value chain
   - Engage with local and regional public services and administrations (BCO)
   - Share Best Practices, Broadband Awards,…

Implementation of the programme

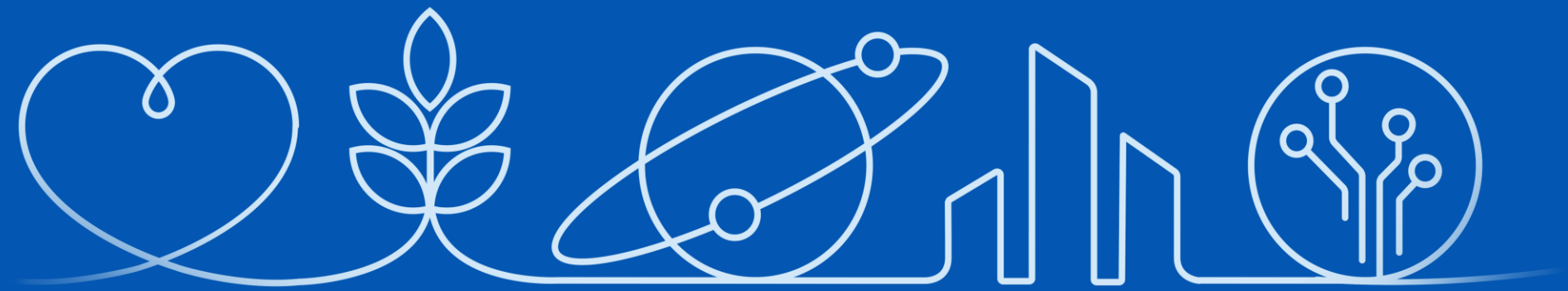
Mr Hervé Dupuy

Head of Unit,

European Health and Digital Executive Agency (HaDEA)

HaDEA – the European Health and Digital Executive Agency

Programme sectors



Health Food safety Space Industry Digital

The programmes HaDEA manages

Health

Horizon Europe – Health

EU4Health

Food

Single Market Programme (SMP): Food Safety

Digital

Horizon Europe – Digital

Connecting Europe Facility – Digital

Digital Europe Programme

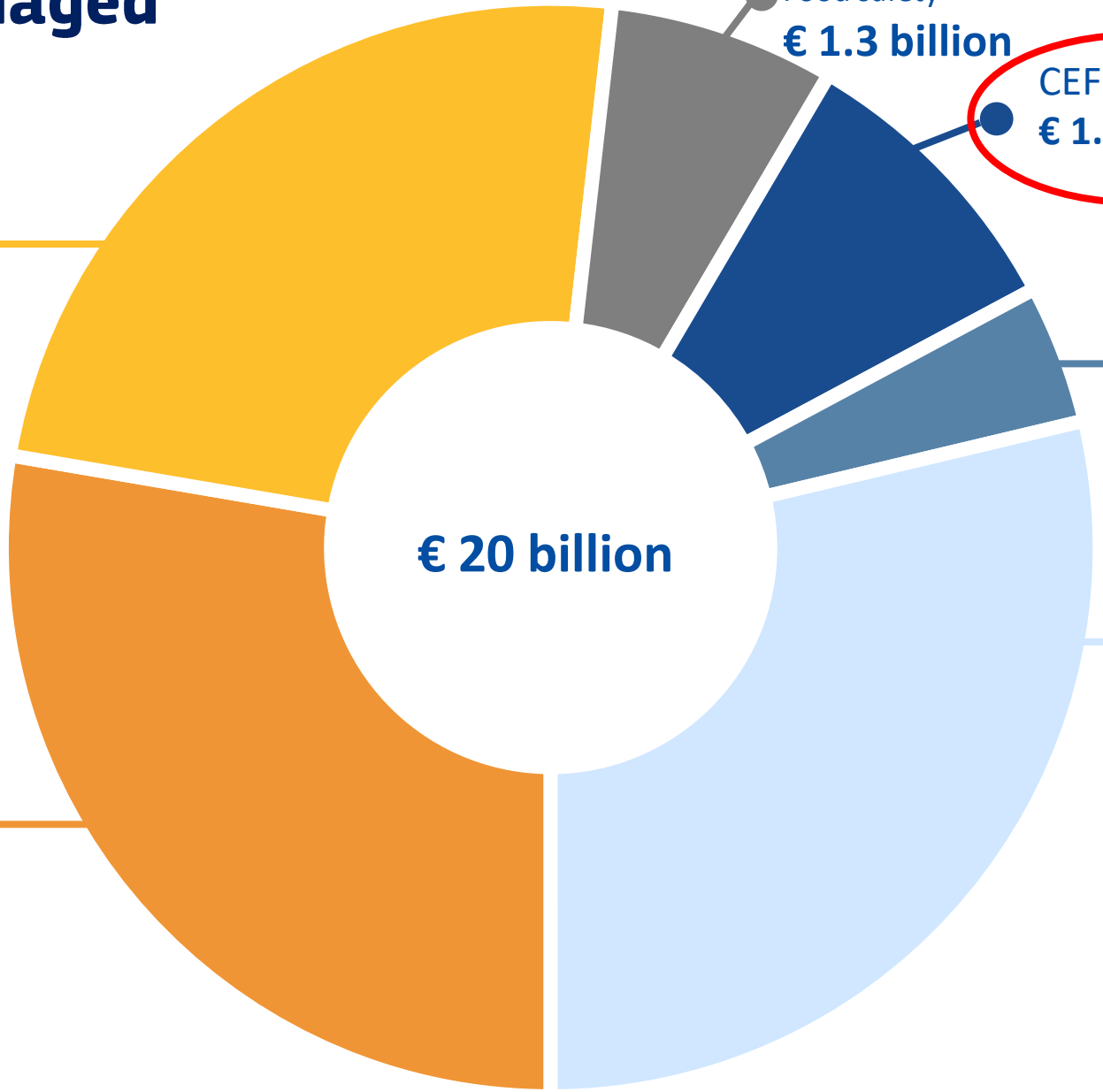
Industry

Horizon Europe – Industry

Space

Horizon Europe – Space

Budget managed by HaDEA (2021-2027)



EU4Health
€ 4.7 billion*
Out of total budget of €5.3 billion

**in current prices*

Horizon Europe
Health cluster
€ 5.4 billion
Out of total budget of €8.2 billion, including €1.3 billion under Next Generation EU

Single Market Programme
Food safety
€ 1.3 billion

CEF Digital
€ 1.6 billion

Digital Europe
€ 0.8 billion

Horizon Europe
Digital, Industry & Space cluster
€ 6.1 billion
Including €500 million under Next Generation EU

CINEA manages:	
CEF Energy	€ 5.8 billion
CEF Transport	€ 25.8 billion

CEF-Digital programme 2021-27

5G for Transport Corridors

5G & edge computing for Smart Communities

Digital Global Gateways

Pan-European Cloud Federations

Quantum Communication Infrastructure

Operational Digital Platforms

Work Programme 2021-23: € 682 million

Work Programme 2024-27: € 864 million

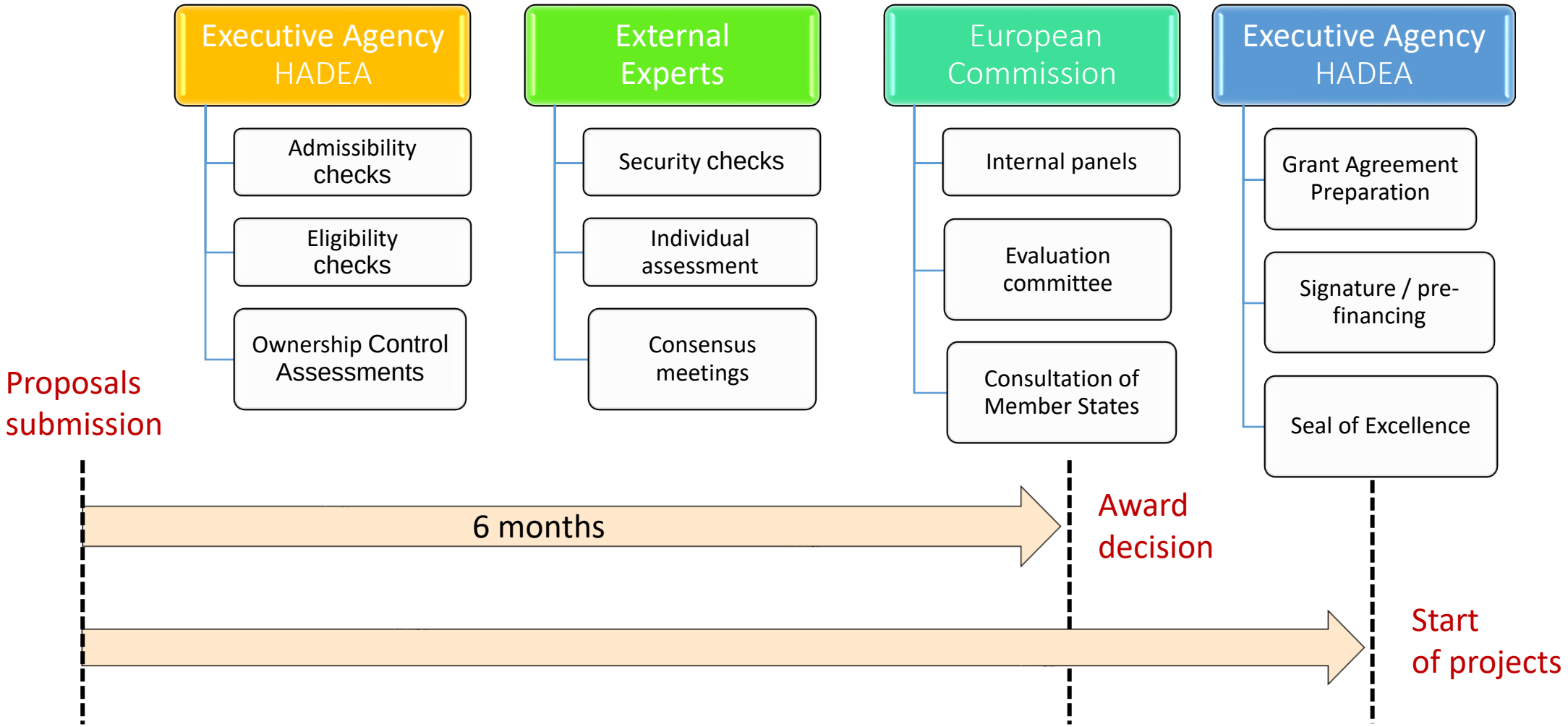
Evaluation and synergies

- 5 award criteria (priority & urgency, maturity, quality, impact, catalytic effect):
  - Min. 3/5 points per criterion + min.15/25 in total.
  - Appeal procedures (admissibility & eligibility, evaluation)

- Co-funding rates: 30% (standard rate), 50% (cross-border projects), 70% (outermost regions), 75% (5G for Smart Communities)

- Synergies: with other CEF sectors (transport or energy), and with other EU programmes (RRF, ESIF)

Evaluation and selection steps



Digital Global Gateways

Mr Thomas Küpper

Policy Officer, Unit B.5. - Investment in high-capacity networks, DG CONNECT, European Commission

Mr Georgios Tselentis

Policy Officer, Unit B.5. - Investment in high-capacity networks, DG CONNECT, European Commission

*“We will build **Global Gateway** partnerships with countries around the world. We want investments in quality infrastructure, connecting goods, people and services around the world.*

We will take a values-based approach, offering transparency and good governance to our partners.

We want to create links and not dependencies!

And we know how this can work. Since the summer, a new underwater fibre optic cable has connected Brazil to Portugal.

[…]

In an unprecedented manner, we will invest in 5G and fibre.“

President European Commission, Ursula von der Leyen

State of the Union speech to the European Parliament, Strasbourg, 15 September 2021

Connectivity Ambition

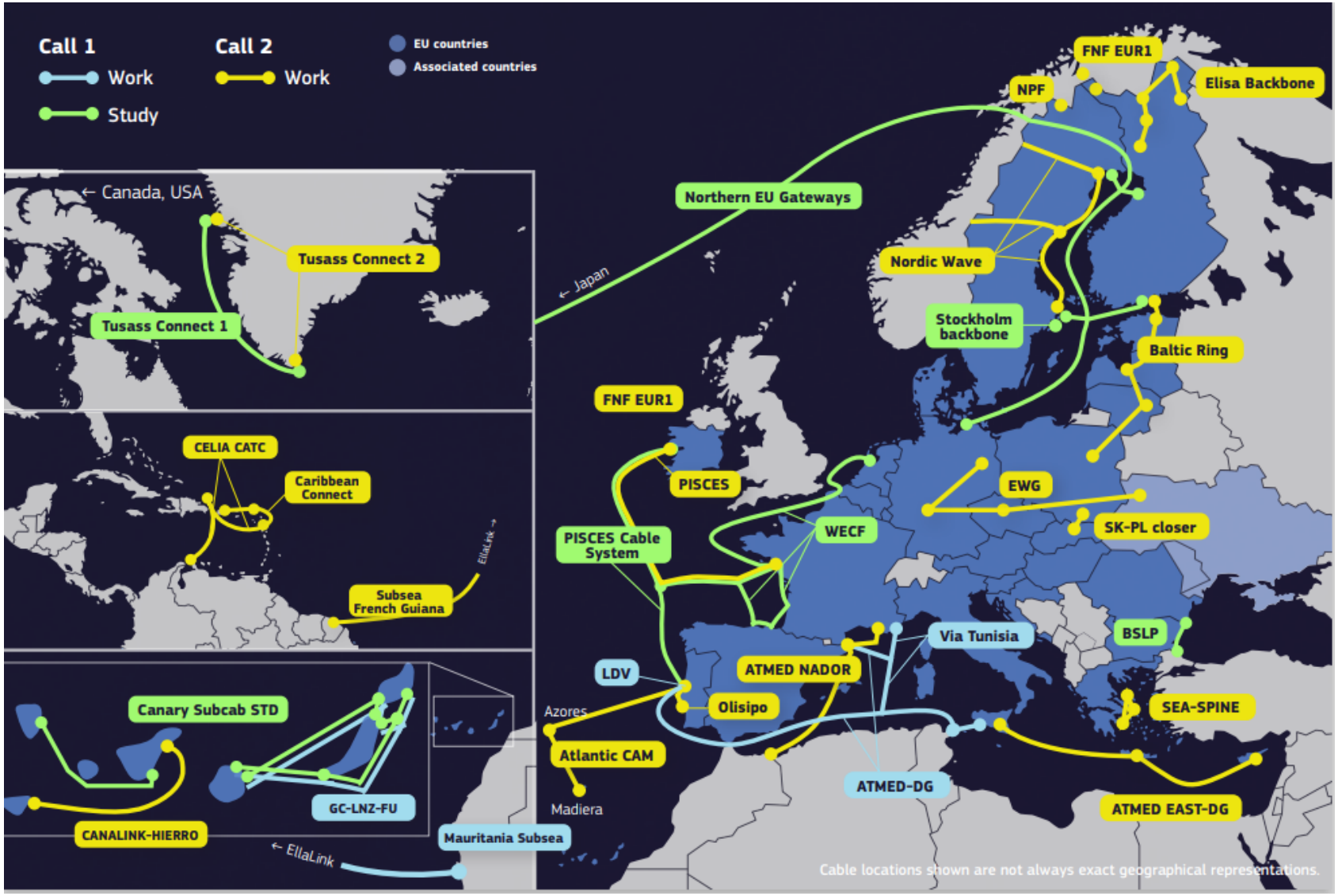
2025 Gigabit Society Objectives

- 100 Mbps to all households, upgradable to 1Gbps
- 1Gbps to all main socio-economic drivers (schools, businesses, etc.)
- Uninterrupted 5G coverage in all urban areas and all major terrestrial transport paths

2030 Digital Compass Targets

- All European households will be covered by a Gigabit network
- All populated areas covered by 5G

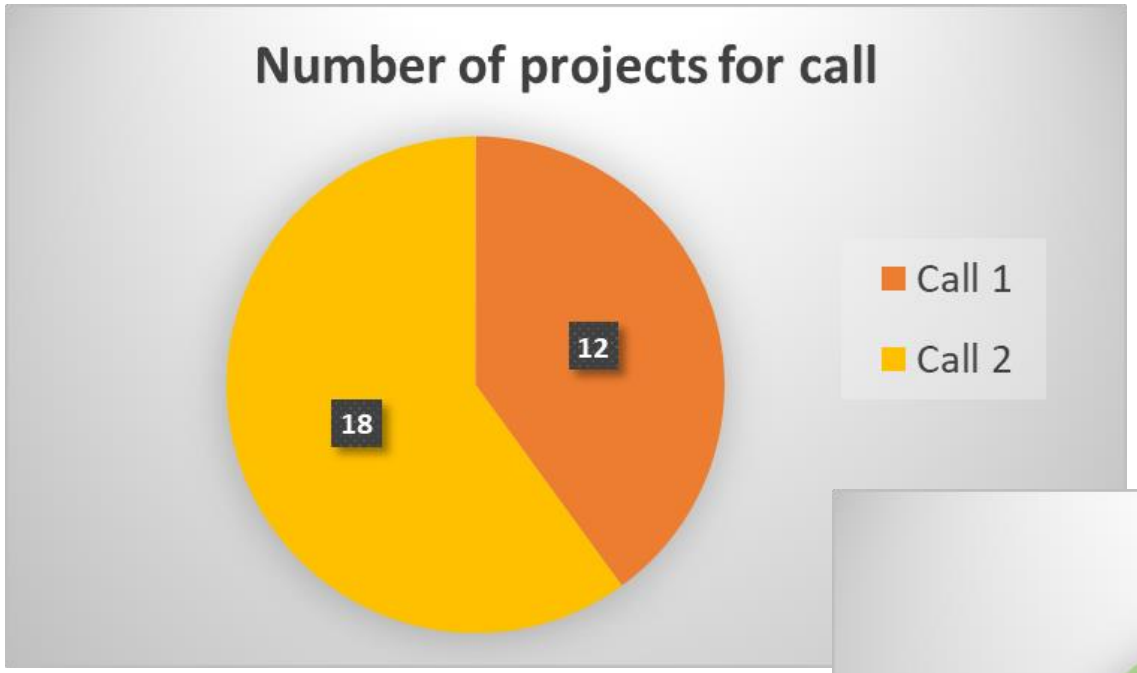
Digital Global Gateways - CEF Call 1 & 2 map

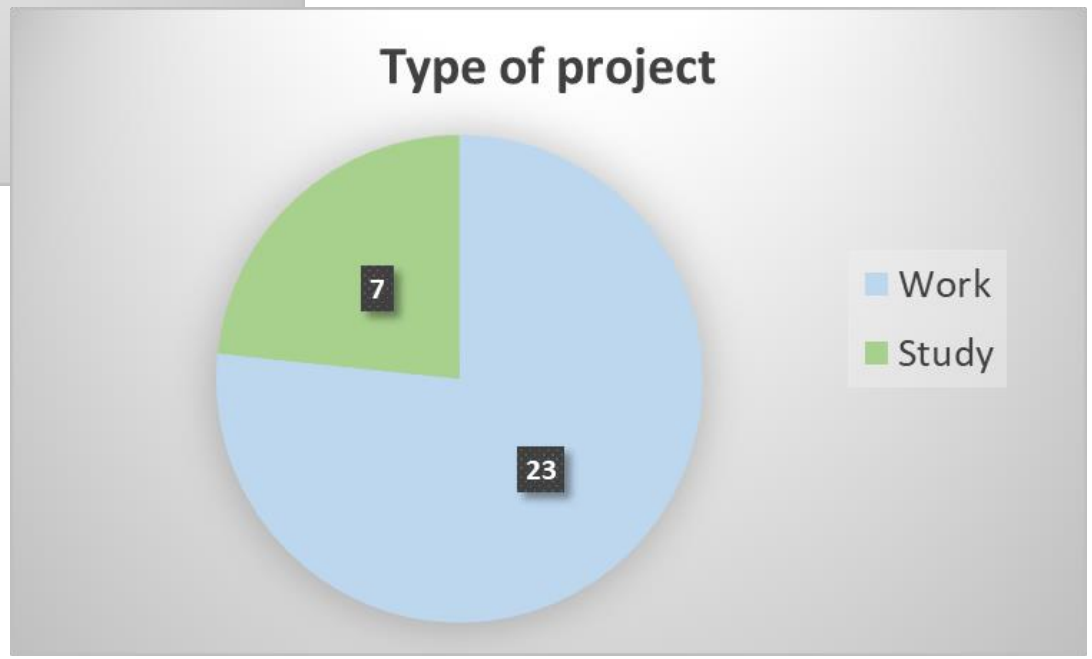


*Please note that this map is just a draft, and it may not reflect the real path of the cables.

European Commission

Digital Global Gateways - CEF Call 1 & 2 statistics





Countries of the project coordinators

European Commission

Connecting Europe Facility — CEF Digital

Digital Global Gateways – 3rd Call for Proposals

Backbone connectivity for Digital Global Gateways

CEF-DIG-2023-GATEWAYS-WORKS & STUDIES

1. Objective

Support the deployment of strategic networks as part of the Digital Global Gateway Strategy of the EU by addressing connectivity needs, such as:

(1) **Connecting territories of the EU** including its Outermost Regions.
(2) **Supporting the specific connectivity needs of the Member States**, which are islands themselves, or have islands as part of their territory.
(3) Intermeshing backbones to **interconnect major connectivity points in the EU**.
(4) Addressing the specific needs of Overseas Countries and Territories in the EU.
(5) **Ensuring international connectivity to EU partners** worldwide as a basis for European strategic autonomy.
(6) **Promoting synergy projects** addressing other objectives of CEF Digital, including sector specific considerations encompassing the connectivity of large-scale digital capacities such as HPC or cloud.

Backbone connectivity for Digital Global Gateways

CEF-DIG-2023-GATEWAYS-WORKS & STUDIES

2. Scope

Support the deployment of backbone connectivity for routes within Member States, between Member States, and between the EU and third countries, including to remote territories where:

(1) there is a lack of **redundancy**, or
(2) existing infrastructure cannot satisfy **demand**, or
(3) the users in the territories suffer from suboptimal **services** and **prices**.

3. Security requirements

- **Exclusion of non-EU** controlled entities (art. 11.4 CEF regulation).
- **Exception** for infrastructure connecting the EU with third countries: legal entities in that third country where their participation is indispensable for the achievement of the objectives can participate subject to security guarantees approved by the third country.
- Security declaration that no **security sensitive equipment** or **services** procured from third country suppliers.

European Commission

Backbone connectivity for Digital Global Gateways

CEF-DIG-2023-GATEWAYS-WORKS & STUDIES

4. Technology neutral call

Digital Global Gateways can be provided with the technology best suited including e.g.:

- **Submarine Cable Systems**,
- **Satellite Infrastructure**,
- **Connectivity to internet exchange points**, and
- **Inter-Connection of Backbones** with networks within the supported territories

5. What will be co-financed

- For **works**: Total project costs required to construct and deliver the described infrastructure for the foreseen lifetime, from end to end, including cable landing station and their connectivity. Operating costs, and costs for the land ownership excluded.
- For **studies:** All preparatory work required to design, deploy and deliver a backbone network, e.g., marine ground surveys for submarine cables, the application for required permits, technological solutions, including any step prior to signing a contract with a supplier, etc.

European Commission

Backbone connectivity for Digital Global Gateways

CEF-DIG-2023-GATEWAYS-WORKS & STUDIES

6. Maximum co-financing rates

- **Studies within a works proposal may also be financed up to 50%!**
- Smart Cables are in scope!
- Call 3 overall budget is 90 M€ (up from 40 M€ in Call 1, similar to 100 M€ in Call 2).
- Indicative grant size: up to 20 M€ for works and 5 M€ for studies.

Works: 30 %

Strong Cross-border Dimension: 50%

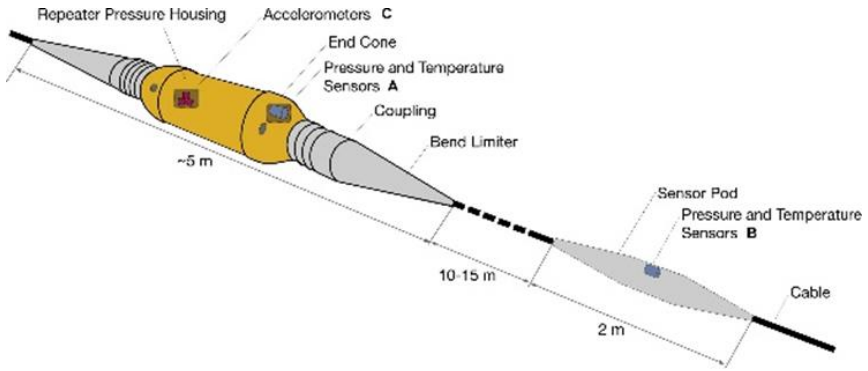
In Outermost Regions: 70%

Studies: 50%

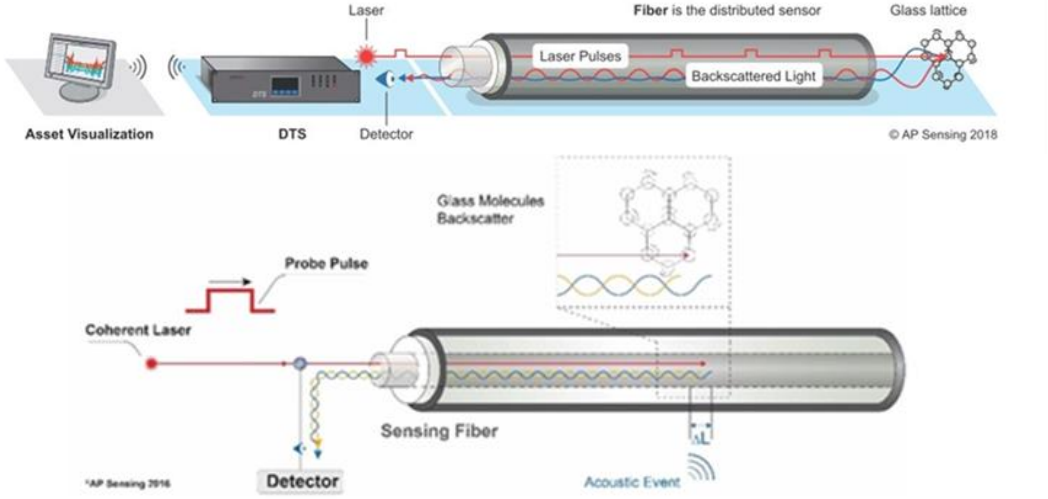
European Commission

“Smart” cables: an emerging technology

- Smart Cable (optic fibre) Systems may use the actual length of the cable either:
- A) by attaching sensors, or
- B) by probing displacement and/or acoustic signals a.k.a. Distributed Acoustic Sensing – DAS.



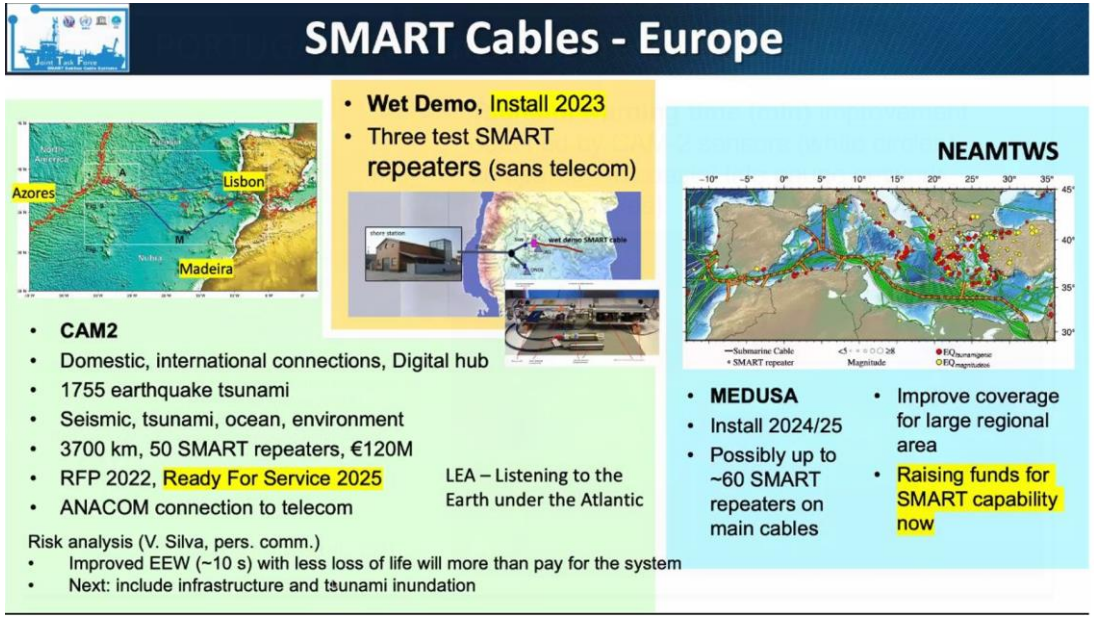
A) Submarine Cable with attached sensors (Alcatel Submarine Networks)

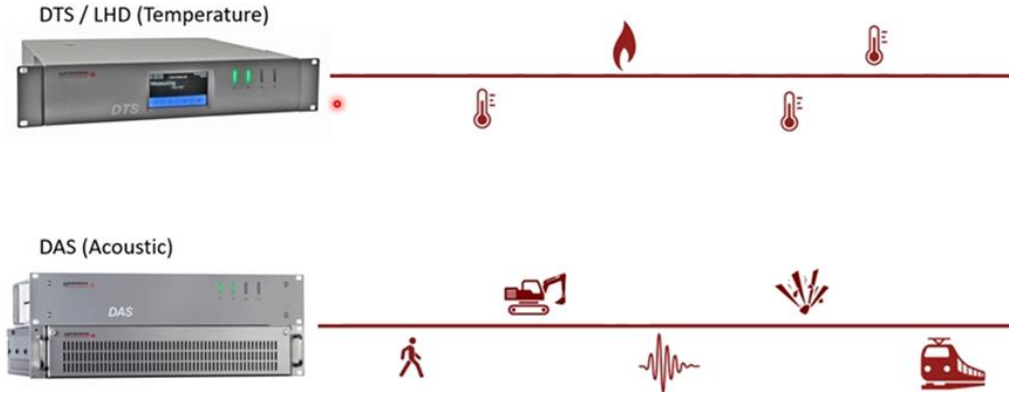


B) Fibre cables sensing a) acoustic b) temperature changes from the laser beam (APSensing)

“Smart” cables: an emerging technology – multiple applications

1. Seismic, volcanic eruptions and tsunami sensing by continuous monitoring.
2. Monitoring of critical energy and digital infrastructure which can be disrupted by natural cause, involuntary activity or sabotage
3. Monitoring traffic (roads, railways, paths)
4. Check of borders’ crossing/unusual activity
5. Research activities close to the seabed for monitoring environmental conditions (e.g. temperature, currents) and marine fauna





5G and Edge Cloud for Smart Communities

Mr Stavros Kalapothas

Policy Officer, Unit B.5. - Investment in high-capacity networks,

DG CONNECT, European Commission

5G For Smart Communities within CEF-Digital

5G coverage along transport corridors

5G and Edge Cloud for Smart Communities

DIGITAL-2021-TRUST-01-SAFEBIN-INTERNET

Backbone connectivity for Digital Global Gateways

Backbone networks for pan-European cloud federations

Quantum Communication Infrastructure

Operational Digital Platforms

€142 millions (Work Programme 2021-27)

The 5G “continuum”

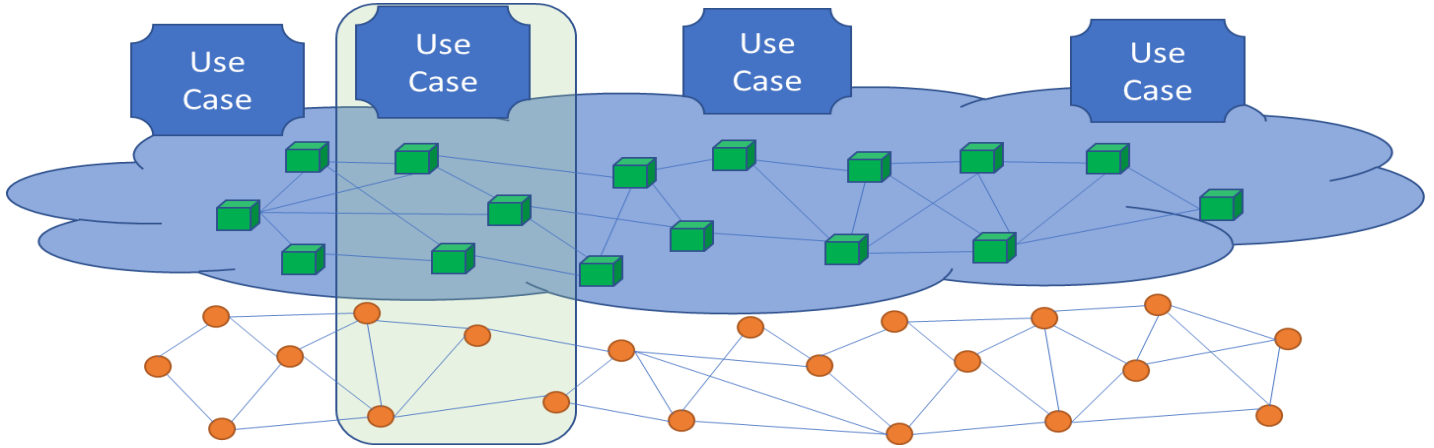
Large-scale 5G deployments → Local 5G systems

Major transport paths

Urban areas

Rural areas

Geographical continuum: From main corridors and cities to local communities and villages



Cloud Edge infrastructure

Connected objects and devices (IoT)

Technological continuum: Application-driven vertical integration, stimulus to EU digital supply chain

5G deployment and take up (bundling connectivity to applications via cloud-to-edge/data/IoT)

5G for Smart Communities

Early adoption initiative to boost 5G coverage & take up in Europe

- Demand-driven: beneficiaries are providers of SGIs
- Focus on projects that do not involve state aid or aid that can be considered compatible without notification
- Innovative use-cases for which 5G is “indispensable”
- Fibre backhaul capacity available
- Best practice, blueprint for possible replication and/or co-funding under other programmes, including RRF
- Up to 75% co-funding from CEF (Art. 14 of CEF Reg.)

Health, Education, R&I programmes…

5GSC Consortium Composition

At least 2 partners:

The owners of the funded 5G infrastructure

The company (MNO) that will operate the network infrastructure (possibly a private network and with unlicensed 5G spectrum)

The end-users

Public authorities or providers of services of general interest *(during the lifetime of the project)*

CEF CALL 1 - 5G FOR SMART COMMUNITIES PROJECTS

5G for a Smart Campus in Sicily

Italy

5G for the Frankfurt University Hospital

Germany

A 5G for disaster relief & public protection along Hungarian-Ukrainian border

Hungary

A 5G network in a Mosonmagyaróvár farm

Hungary

5G connectivity for smart services in Toulouse

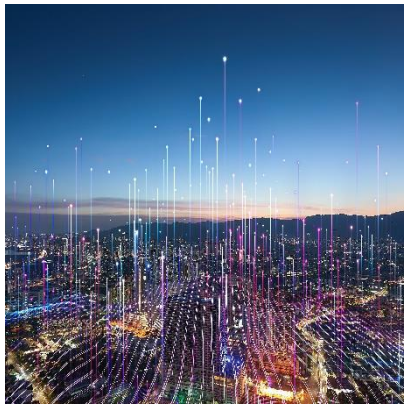
France

5G network for emergency response in Wavre

Belgium

5G coverage for healthcare and education in Flanders

Belgium



5GSC Project Portfolio: Call 1 & 2 projects

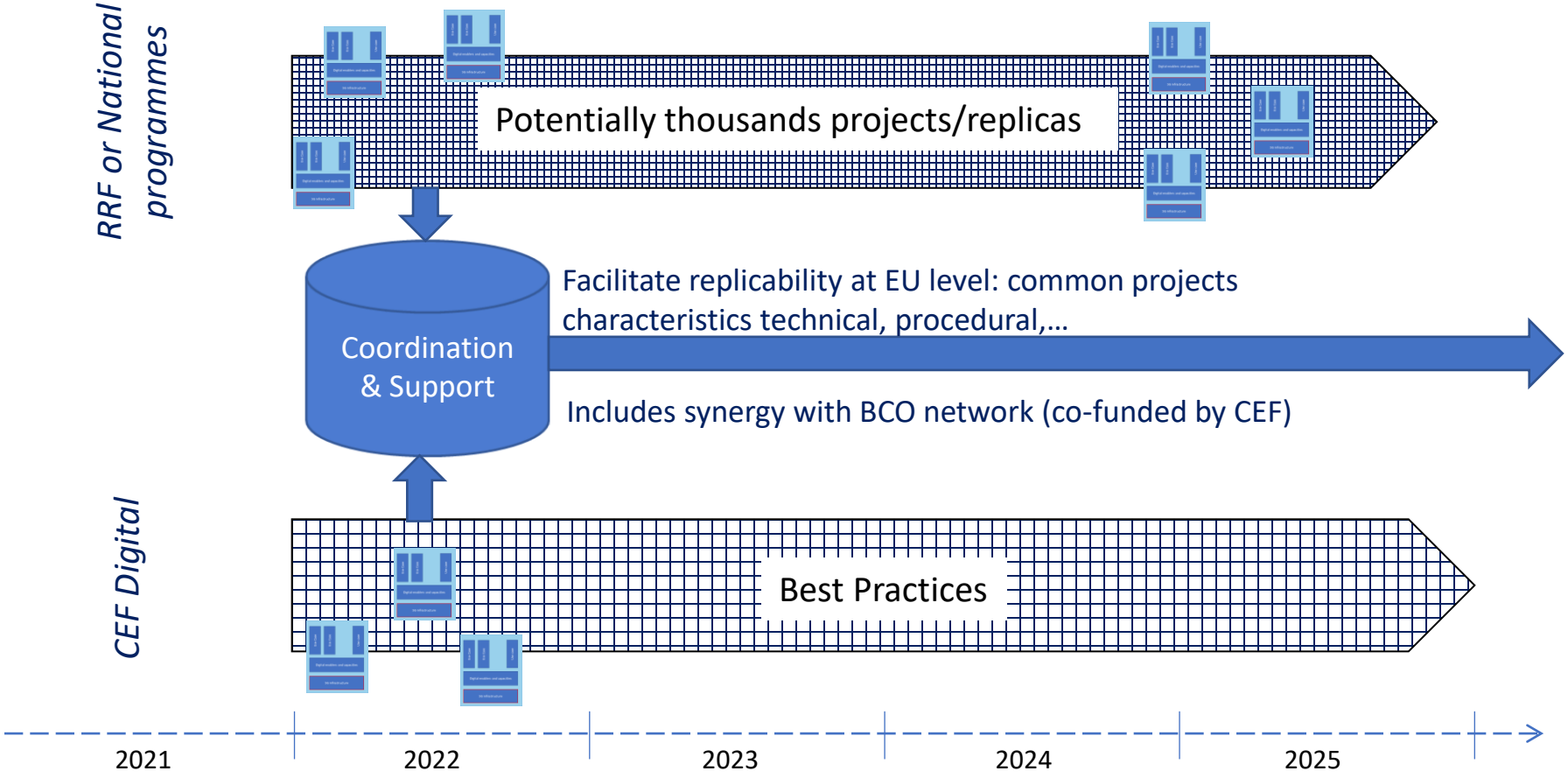
17 projects funded

EU grants
€50 M

Replicable 5G use cases for socio-economic drivers

Learn more

Synergy between programmes (sharing of best practices, knowledge…)



Coordination & Support

Sharing of:

- Requirement analysis
- Technical specs
- Reference architectures
- UX tests and reports
- SA notification best practices
- Business models
- Impact assessment models
- Investment models
- Partnership agreements
- Technical assistance
- ….

Terms & conditions, licence models,….

5GSC Call-1 & -2 trends

- **From projects' portfolio**
  - Public Operators - Alternative Operators - Tower Companies
  - Public & Private 5G Networks (MPN)
  - Transitional flexibility: 5G Standalone (SA) & 5G non-Standalone (NSA) (RF upgrade, 4G core)
  - **Edge Cloud** network integration (with EU-based cloud solutions)
    - Key benefits:
      - Densification: increase of the connected objects & devices
      - Reduced latency
      - Reduced power consumption
  - Variety of IoT applications (port safety, city recycling, city traffic, precision agriculture)
  - Multiple verticals (health, education, energy, transport)
  - Positive impact in environmental transition and energy consumption

5GSC Community Support Platform

- **Make sure to join the 5GSC Community Support Platform: 5GSC.eu**

- The platform is a networking & knowledge-exchange online platform where you can:

  - Meet like-minded stakeholders & project partners
  - Share good practices
  - Stay up to date with 5G events
  - Get information on call openings